



Dart Aerospace Ltd.
1270 Aberdeen St
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D212-664-101TRN
Job Sheet 184698



Part No: D212-664-101TRN

Job Qty: 1 ea

Part Name: Crosstube Turning Detail



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 10/16/18

Job Tracking No:

Due Date: 10/19/18

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: DWG REV E IPP Rev:A 08-03-06 new issue DD verified by:ec IPP Rev B 08.04.02 removed Polish EC verified by: DD

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea		10/19/18	0.00	0.00	Start Up Crosstubes-1		MD
100	Mori Seiki	1 pcs		10/19/18	4.40	2.38	Mori Seiki TL-40		MD
110	QC	1 pcs		10/19/18	0.00	0.00	QC2-1		MD
120	Mori Seiki	1 pcs		10/19/18	0.00	2.38	Mori Seiki TL-40		MD
130	QC	1 pcs		10/19/18	0.00	0.00	QC2-1		MD
140	QC	1 pcs		10/19/18	0.00	0.00	QC8		GP 2018-10-22
145	Crosstubes	1 pcs		10/19/18	0.00	0.68	Crosstubes-1		GP 2018-10-22
150	HandFXtube	1 pcs		10/19/18	0.00	1.00	Crosstubes-3		GP 2018-10-22
160	QC	1 pcs		10/19/18	0.00	0.00	QC7-1		DP2
170	Packaging	1 pcs		10/19/18	0.00	0.00	Packaging3-1		DP2
180	QC21-SA	1 Ea		10/19/18	0.00	0.00	QC21		21 OCT 24 2018

Part Op 100 - 1- Fill tube with sand & install plugs 212-141 on both ends as per Folio FA113 3- Turn first taper section on both
Descriptions: side as per folio FA113

120 - 1- Turn second taper on both side 4- Scribe part # and batch # using vibrating stylus on the cuff as per Dwg D212-664-141

145 - GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.

150 - 1- handfinish X-TUBE INSIDE AND OUT

170 - LOCATION : LG014

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6005-128	Crosstube Material	1 Ea (1 ea)	90-Start up Operation	

B139414

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D6005-128	1	57	0

Part Specifications

Specifications could not be found.

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION		AGAINST DEPARTMENT/PROCESS			
	Rework ☐	Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	
	Scrap ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	
	Use-as-is ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	
	Suspected Unapproved ☐	Large Fab ☐	Composite ☐	Supplier ☐		
Date : _____		Step #: _____		QTY Effective : _____		MRB (QSI042) Approval
Description Work Order Deviation				Disposition		Completed By
						Lead hand / Supervisor Approval Verification
						QC / QA Coordinator Approval

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Container No: S119687



Part: D212-664-101TRN

Job No: 184698

Serial No/Batch: S119687

Revision: E

Inspector: _____

Exp Date: _____

Instructions: _____

Date: 10/18/18

FAULT CATEGORY

Effect Defect/Unqualified	☐ Power Loss/Surge	☐ Positioned Wrong
	☐ Folio/Program	☐ Outside Dimensions
	☐ Grain	☐ Over/Under tolerance
	☐ Weld	☐ Part Incorrect
	☐ Wrong Stock Pulled	☐ Part Lost/Missing
Cause Defect/Unqualified	☐ Out of Sequence	☐ Part Moved
	☐ Off-set	☐ Drawing
	☐ Mislabeled	☐ Finish
	☐ Fit/Function	☐ Misread
	☐ Misaligned/off center	☐ Turning Sequence

①

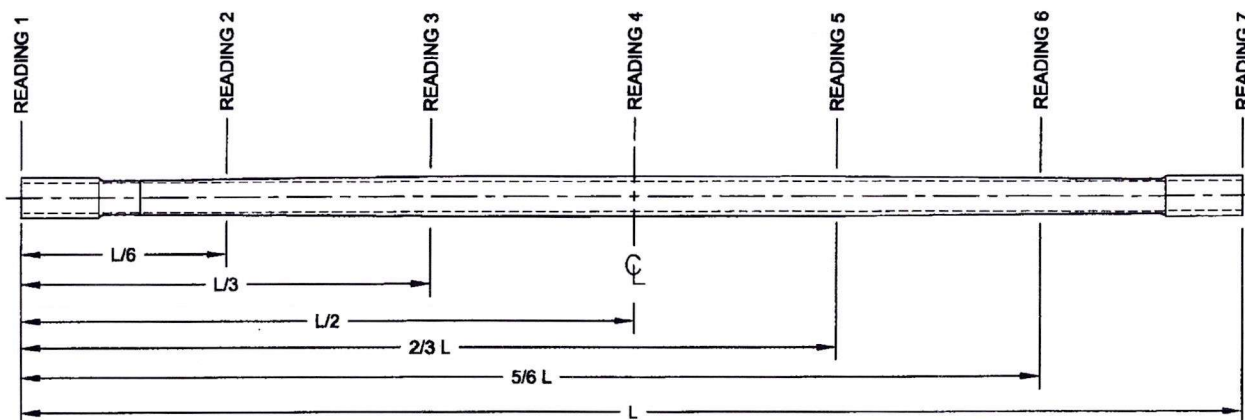
DART AEROSPACE LTD	Work Order: 184698
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number: D212-664-141
Inspection Dwg: D212-664-141 Rev: E	Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.200	+/-0.010	.197	✓		cnc-08	
	R0.063	+/-0.010	.063	✓		RG	
	2.740	+0.005/-0.000	2.743	✓		cnc-04	
	5.097	+/-0.030	5.102	✓		cnc-08	
	2.304	+0.005/-0.000	2.309	✓		cnc-04	
	2.340	+0.005/-0.000	2.344	✓			
	2.398	+0.005/-0.000	2.403	✓			
	2.448	+0.005/-0.000	2.453	✓			
	2.498	+0.005/-0.000	2.502	✓			
	2.549	+0.005/-0.000	2.554	✓			
	2.599	+0.005/-0.000	2.604	✓			
	2.671	+0.005/-0.000	2.676	✓			
	2.701	+0.005/-0.000	2.706	✓			
SIDE B	0.200	+/-0.010	.203	✓		cnc-08	
	R0.063	+/-0.010	.063	✓		RG	
	2.740	+0.005/-0.000	2.743	✓		cnc-04	
	5.097	+/-0.030	5.103	✓		cnc-08	
	2.304	+0.005/-0.000	2.309	✓		cnc-04	
	2.340	+0.005/-0.000	2.345	✓			
	2.398	+0.005/-0.000	2.403	✓			
	2.448	+0.005/-0.000	2.453	✓			
	2.498	+0.005/-0.000	2.503	✓			
	2.549	+0.005/-0.000	2.554	✓			
	2.599	+0.005/-0.000	2.604	✓			
	2.671	+0.005/-0.000	2.676	✓			
	2.701	+0.005/-0.000	2.706	✓			
	126.514	+/-0.020	126.494	✓		tape	

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Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number: D212-664-141
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WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.363	.381	.380	.369	.018	0.048"
READING 2 L= 21.09	.249	.241	.223	.232	.026	
READING 3 L= 42.17	.357	.354	.344	.348	.013	
READING 4 L= 63.25	.380	.380	.377	.376	.004	
READING 5 L= 84.34	.354	.352	.346	.349	.008	
READING 6 L= 105.43	.235	.236	.234	.236	.002	
READING 7 L= 126.54	.376	.373	.372	.376	.004	

Calibration Result

Actual Block Thickness: 200-400

Sitiescan 250 Measured Thickness: 200-400

Measured by: MD	Audited by: GP	Preliminary Approval:
Date: 2018-10-18	Date: 2018-10-22	Date:

Rev	Date	Change	Revised by	Approved
C	07.05.28	Dwg Rev updated (P/O D412-664-101)	KJ/JLM	
D	10.02.02	Dimension 126.514 was 126.51	KJ	
E	12.06.04	Wall thickness form added	KJ	
F	14.06.05	Dwg Rev updated	KJ	

Item	Qty -141	Qty -141B	Qty -141F	Part Number	Description
1	X			D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
2		X		D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3			X	D212-664-141F	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD) (ANODIZED)
4	1	1	1	D6005-128	CROSSTUBE
5	2		2	D2893-1	SUPPORT
6	4	4	4	D3595-063-450	RUBBER CUSHION
7		2		D5017-1	SUPPORT
8	4	4	4	MS21920-25	CLAMP (OR MS21920-26)
9	A/R	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6005-128
FINISHED LENGTH = 126.514±0.020
- FINISH -141 & -141B: a) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
b) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
c) MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C6-2 / C6-3, HATCHED AREA)
d) PAINT OUTSIDE PER DART QSI 005 4.2
e) REMOVE MASKING AND APPLY MATTE CLEAR COAT
- FINISH -141F: a) ANODIZE PER MIL-A-8825, TYPE II, CLASS 1.
b) ALODINE (DO NOT ETCH) PER QSI 005 4.1.2
c) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
d) MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C6-2 / C6-3, HATCHED AREA)
e) PAINT OUTSIDE PER DART QSI 005 4.2
f) REMOVE MASKING AND APPLY MATTE CLEAR COAT
- *NOTE: BETWEEN FINISHING OPERATIONS EXTREME CARE MUST BE TAKEN NOT TO CONTAMINATE OR DAMAGE FINISHED SURFACES.
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER 'D212-664-XXX' AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS
- WEIGHT: D212-664-141/-141B/-141F = 33.6 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

MACHINING

- RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.

BENDING

- BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7.2% (BASED ON O.D.) IN LOWER HALF OF R35.5 BEND AND 6% (BASED ON O.D.) ON REMAINING TUBE.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

ASSEMBLY

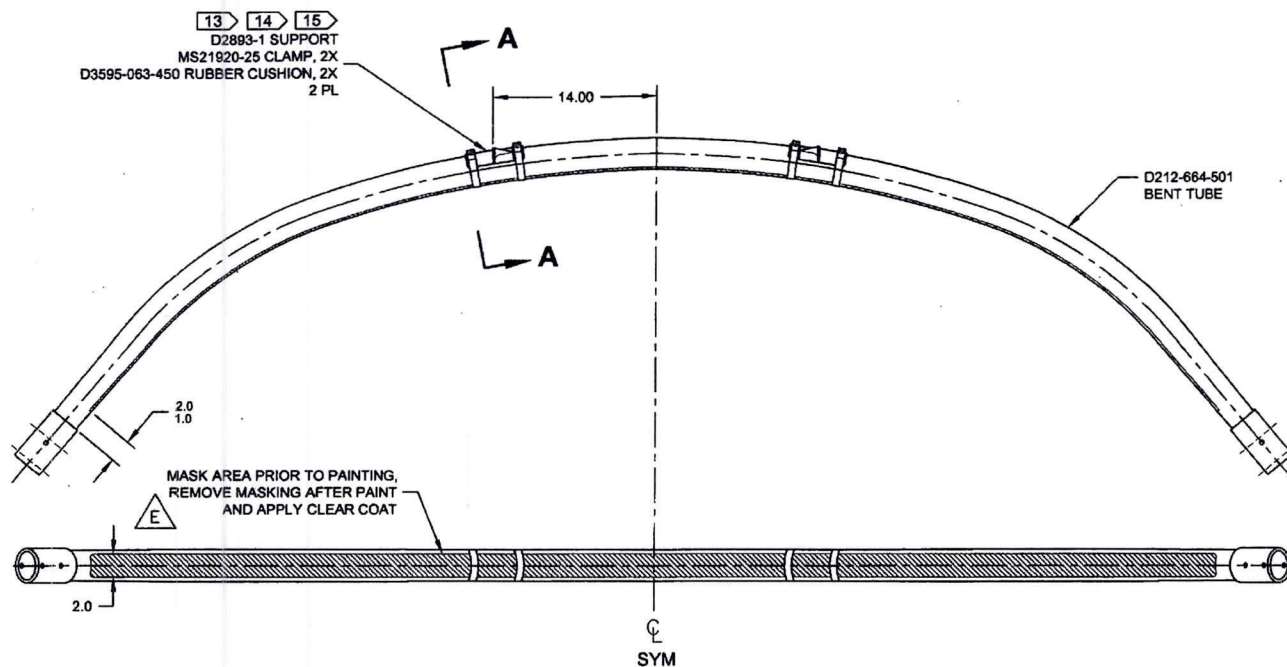
- TO INSTALL D2893-1 / D5017-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP SIDE OF CROSSTUBE.
- TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

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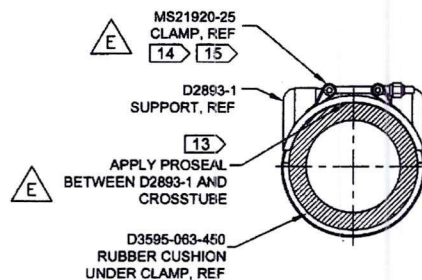
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WD

E	ADD -141F, D5017-1 WAS D2893-1 (-141B), PROSEAL WAS MAGNOBOND, NOTE 2: ADD INSPECTION WINDOW, NOTE 11: ALLOW 7.2% CRUSH, NOTE 15: ADD 72HR CURE AND RETORQUE FOR PROSEAL, ADD SHEET 3, CLAMPS REVERSED TO PREVENT CHAFING (B7-2, B7-3), BEND HEIGHT TOL. NOW 0.25 WAS 0.13 (C1-3), INCORP. DEO D-1/-2/-3	CP	14.04.01
D	REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -141B (ZN B4-2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C6-3, C8-3 & B6-3); RELOCATED FLAG #6 PER PAR 08-045 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	09.09.30
C	REMOVE -551 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	CP	00.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	14.04.01		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D212-664-141	REV. E SHEET 1 OF 6
TITLE XTUBE ASS'Y (205/212/412 HI FWD)	SCALE NTS
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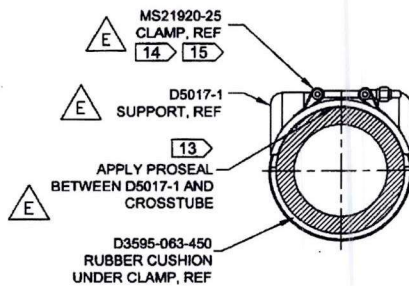
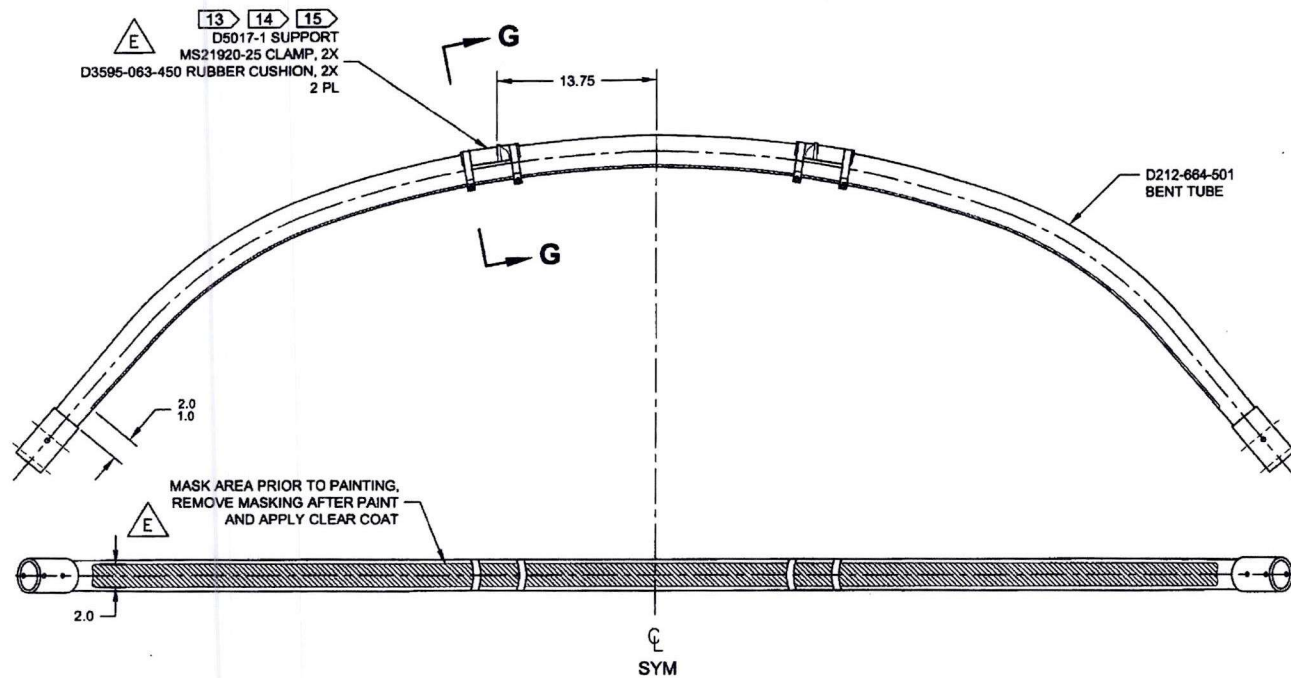
**D212-664-141/-141F
ASSEMBLY DETAIL**



SECTION A-A
SCALE 4X

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AND

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MFG. APPR.		D212-664-141	SHEET 2 OF 6
APPROVED		TITLE	SCALE
DE APPR.		XTUBE ASS'Y (205/212/412 HI FWD)	NTS
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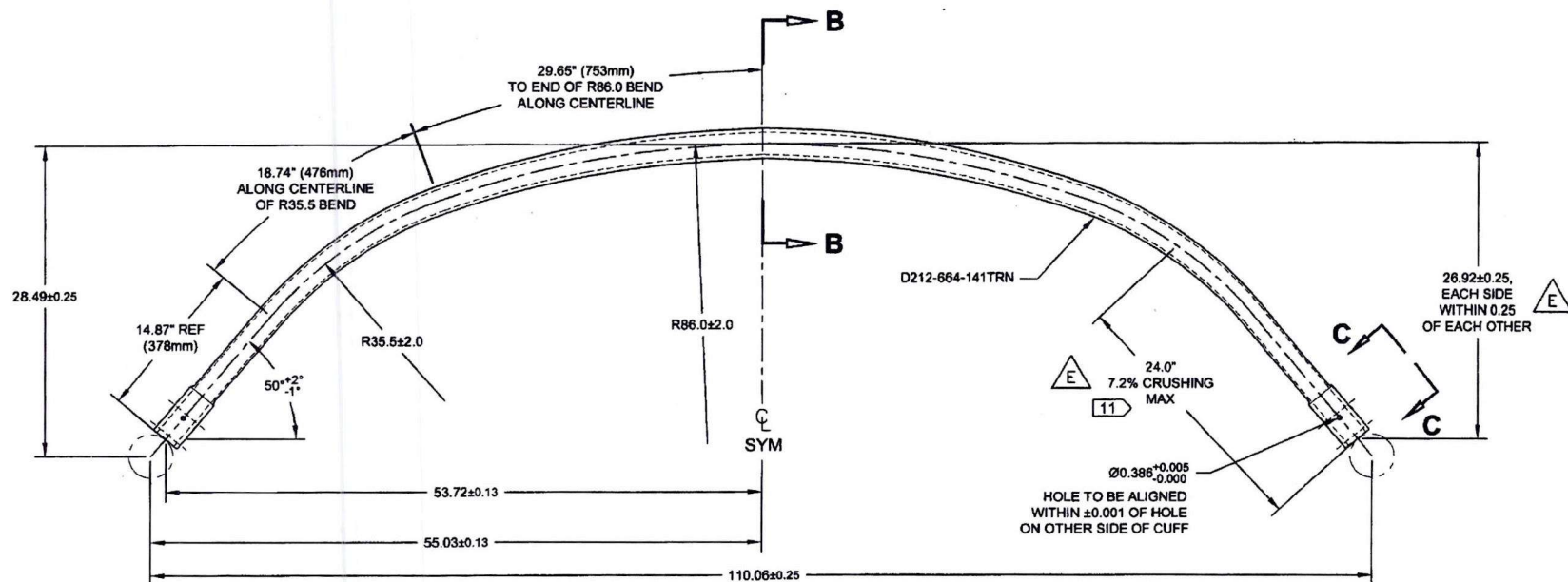


SECTION G-G
SCALE 4X

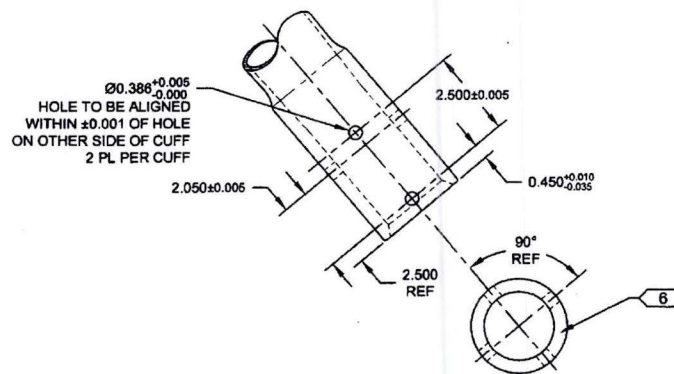
D212-664-141B
ASSEMBLY DETAIL

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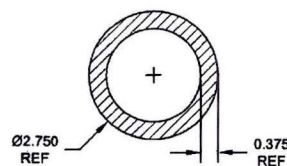
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D212-664-501
BENDING AND DRILLING DETAIL 11



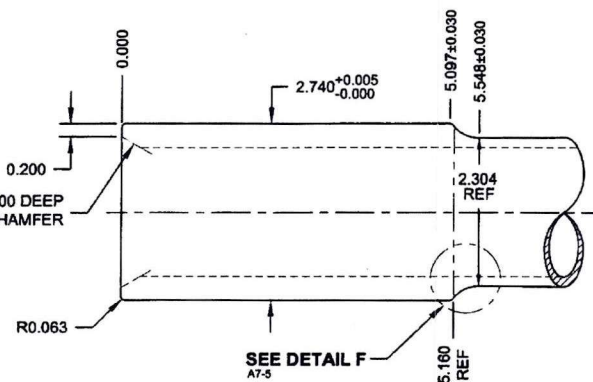
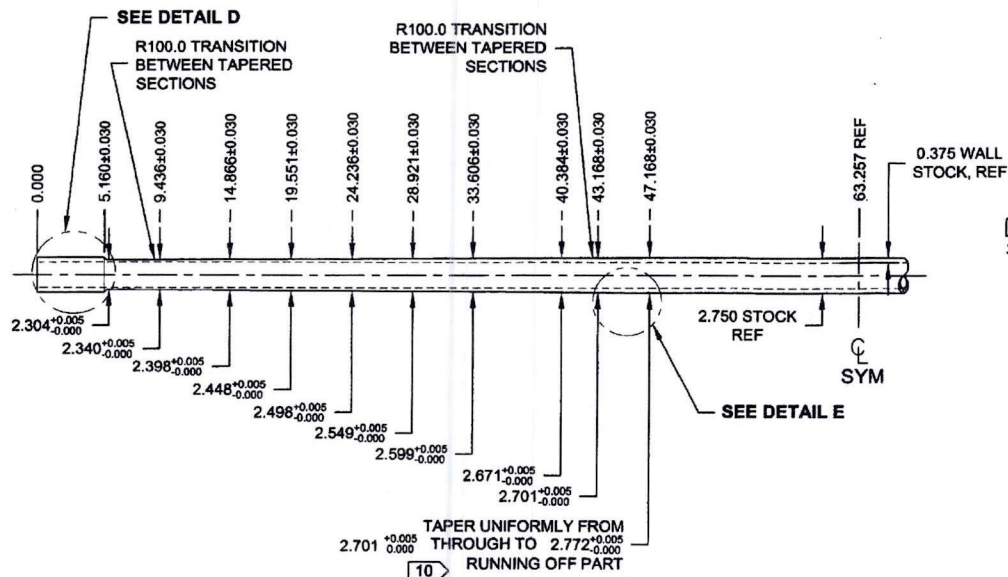
VIEW C-C: CUFF DETAIL
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SECTION B-B
SCALE 4X

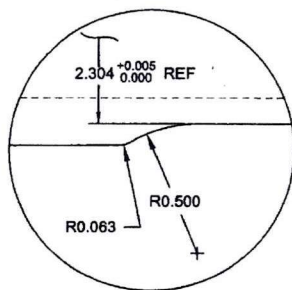
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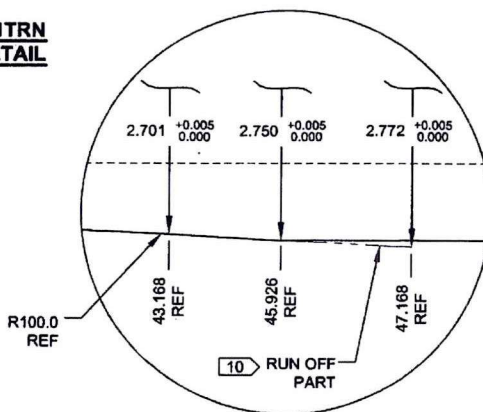


DETAIL D:
CROSSTUBE CUFF
SCALE 5X

D212-664-141TRN
TURNING DETAIL



DETAIL F:
CUFF TRANSITION
SCALE 10X



DETAIL E:
TAPER RUN-OFF
NOT TO SCALE

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